FENOC

FirstEnergy Nuclear Operating Company

5501 North State Route 2
Oak Harbor, Ohio 43449

Mark B. Bezilla
Vice President - Nuclear

419-321-7676
Fax: 419-321-7582

Docket Number 50-346

License Number NPF-3

Serial Number 3013

December 17, 2003

United States Nuclear Regulatory Commission
Document Control Desk
Washington, D. C. 20555-0001

Subject: Response to Questions Regarding the 2002 Steam Generator Tube Inspections (TAC No. MB9541)

Ladies and Gentlemen:

By letters dated March 22, 2002 (Serial Number 2771), and March 31, 2003 (Serial Number 2944), the FirstEnergy Nuclear Operating Company (FENOC) reported the results of the Davis-Besse Nuclear Power Station (DBNPS) 2002 steam generator tube inspections. By letter dated November 3, 2003 (Serial Number 2989), FENOC responded to an NRC request for additional information regarding the 2002 steam generator tube inspections. On December 4, 2003, the NRC transmitted thirteen additional questions via electronic mail. Responses to five of these questions are provided in Attachment 1 to this letter. A conference call was held on December 11, 2003, to discuss the proposed DBNPS responses to these five questions. During that conference call, the NRC requested additional information regarding the chemistry conditions during the extended shutdown. This request, identified as Question 14, is responded to in Attachment 1 to this letter. The remaining questions will be responded to in a separate letter targeted for submittal by December 30, 2003.

Should you have any questions or require additional information, please contact Mr. Kevin L. Ostrowski, Manager - Regulatory Affairs, at (419) 321-8450.

Very truly yours,

Mark B Bezilla

MAR

Attachments

A047

cc: Regional Administrator, NRC Region III
J. B. Hopkins, DB-1 NRC/NRR Senior Project Manager
C. S. Thomas, DB-1 NRC Senior Resident Inspector
Utility Radiological Safety Board

RESPONSE TO QUESTIONS ON LICENSEE'S RESPONSES TO REQUEST FOR ADDITIONAL INFORMATION DAVIS-BESSE NUCLEAR POWER STATION 2002 STEAM GENERATOR INSPECTION (TAC No. MB9541)

Question #3:

It was indicated that approximately 60 percent of the roll expansions in the upper tubesheet were examined with a rotating probe (+Point™ and pancake coil) during the 2002 outage. Given that crack indications were detected in this region, it is not clear why the sample was not expanded to include 100 percent of the tubes in this region. The staff notes that industry guidance (Electric Power Research Institute (EPRI) Pressurized Water Reactor (PWR) Steam Generator Inspection Guidelines) would require expansion of the initial sample to include all of the roll expansions and tube ends in the upper tubesheet upon the detection of a single crack.

Provide the technical basis for not inspecting the upper tubesheet roll expansions and tube ends for 100 percent of the tubes. Discuss the methodology (and technical basis) for addressing the structural and leakage integrity for degradation that could be occurring in this region of the tube given that approximately 40 percent of the roll expansions and tube ends in the upper tubesheet were not inspected during the 2002 outage.

Response:

Consistent with the guidance of Nuclear Energy Institute (NEI) 97-06, the technical basis for deviation from the EPRI PWR Steam Generator Examination Guidelines was evaluated and approved in accordance with the Davis-Besse Nuclear Power Station (DBNPS) Steam Generator Management Program prior to the thirteenth refueling outage (13RFO) inspection. The technical basis and its methodology are further discussed below.

The 57%* inspection of the upper roll expansions/tube ends completed the inspection of the unsleeved, in-service tubes for this region at the DBNPS. The inspection program covered the previous three cycles, with 20%* being inspected at 11RFO and 21%* at 12RFO. All three inspections were randomly sampled and distributed across the tubesheet with no concentration in either the peripheral or interior regions of the tube bundle. The 13RFO sample selection for the inspection of the upper roll expansions/tube ends included all unsleeved in-service tubes ends not previously inspected during the prior two steam generator inspections. The sample population was randomly split into three inspection categories, 1S, 2S and 4S, where S was defined as approximately 14% of the sample population. If any of the three sample populations contained 1% defective tubes (C-3 inspection category), the inspection would have been expanded to 100% of the unsleeved in-service upper tubesheet roll expansions/tube ends per the 13RFO Degradation Assessment. No C-3 category expansion of the inspection was required based upon the inspection results.

Based on the results of the 11RFO and 12RFO inspections at the DBNPS, it was determined that primary water stress corrosion cracking (PWSCC) in this region was not significantly active, in that only 6 axial tube end indications were detected at 11RFO and 8 new axial tube end indications were detected at 12RFO. Indications in the roll transition region were not detected in either sample inspection in 11RFO or 12RFO. The only previous PWSCC indication in the expansion transition region was detected in 10RFO in a tube that had been rerolled at the factory after the full vessel stress relief and therefore is in a different population of tubes that has received a 100% inspection in 11, 12, and 13RFOs.

The bases for not expanding the inspection to include 100% of the unsleeved, in-service tubes are the low frequency of indications detected in the 57% sample of tubes, the indications are not a structural integrity issue, and the indications have a very small impact on postulated Main Steam Line Break (MSLB) leakage based on a

* These percentages represent the ratio of the number of inspected upper tube ends to the total number of unsleeved tubes. The percentages do not total 100% because tubes that have been removed from service by plugging were not inspected. All in-service upper tube ends have been inspected within the last 60 Effective Full Power Months (EFPM). Upper tube ends for sleeved tubes do not perform a pressure boundary function.

very conservative testing program. The DBNPS evaluated these facts and determined it technically appropriate to take an exception to the EPRI PWR Steam Generator Examination Guidelines. The exception revised the inspection expansion criteria based on tube end region leakage and followed the NEI 97-06 and DBNPS Steam Generator Management Program protocols for development and approval.

The 13RFO 57% sample of tubes was inspected for the first time ever with the +Point coil in the tube end/roll region (15.8 EFPY) and only 39 crack-like indications (35 Tube End Cracks (TEC), 1 Single Axial Indication (SAI) within roll, 3 circumferential indications) were detected in OTSG 2-A, and 6 TECs and 2 volumetric indications were detected in OTSG 1-B. Of the 41 axial TECs identified during 13RFO, 27 were single axial anomalies and 14 were identified as multiple axial anomalies. These numbers when combined with the prior two inspections' results for the remaining tube population, indicate a relatively small population of affected tubes compared to other OTSG operating experience at similar effective full power years (EFPY).

More importantly, axial indications at tube ends within the clad tubesheet region are not a structural concern because of the presence of the tubesheet. Test results using electrical discharge machine (EDM) notches in tube ends established conservative leak rates for this condition, which resulted in an NRC approved Alternate Repair Criteria (ARC) to allow axial indications in the tube ends to remain in service at once-through steam generator (OTSG) plants. Although the DBNPS is not currently licensed to utilize this ARC to allow TECs to remain in service, it does utilize the plant-specific leak rates developed from the testing to assess leakage integrity for the purposes of satisfying Condition Monitoring (CM) and Operational Assessment (OA) requirements. Throughwall cracking is assumed for all projected axial PWSCC tube end degradation in the clad region. These leak rates are a function of radial position in the bundle due to tubesheet-hole dilation under postulated MSLB conditions, which is the limiting event in terms of primary to secondary leakage in the OTSGs at the DBNPS.

The Operational Assessment for all types of degradation in the upper roll and tube end region considered the inspection scope at 13RFO, potential undetected degradation, and the radial location in the bundle of observed 13RFO tube end degradation within the tubesheet clad region. The end-of-cycle (EOC) 14 analysis for TECs assumed the same radial distribution of indications as observed at 13RFO and a

Weibull slope of 6.0, which is benchmarked against industry data and is a conservative upper bound estimate for PWSCC degradation prediction per EPRI Report NP-7493, "Statistical Analysis of Steam Generator Tube Degradation," dated September 1991. This method of projecting the total number of indications (63 axial and 5 circumferential) in the upper tube end (UTE) region at EOC 14 is more conservative than using the probability of detection (POD) of the non-destructive examination (NDE) technique utilized at 13RFO to account for the number of indications not detected. Using the POD to predict the number of indications at EOC 14 is not as conservative since it would predict only 43 indications. This estimation is derived as follows: 39 detected at 13RFO, increased to 69 to account for the percentage of in-service tubes uninspected, then increased to 82 to account for the 0.84 POD from the NDE technique used, and then repairing 39 at beginning of cycle (BOC) 14; resulting in 43 indications remaining. Therefore for the case of the DBNPS EOC 14 predictions, it is more conservative to utilize a Weibull approach, which predicts 68 total indications to exist.

Tube end indication leak rates are limited by the rolled tube-to-tubesheet annular interface, not crack opening area. Use of the 95/95 leak rates for every indication and multiplication of leak rates for multiple TECs in a single tube end are conservatisms that are applied when implementing the TEC ARC and allowing TECs to remain in service. For the case of the DBNPS where all TECs are currently repaired, it is sufficiently conservative to apply the 95/95 leak rates to each projected affected tube at EOC, without concern as to whether multiple or single indications would occur in the tube. The resulting effect of addressing single and multiple indications separately at EOC 14 would only have a 0.01 gpm effect on the limiting total steam generator leak rate. As such, the resulting upper bound contribution to MSLB leakage from the upper tube roll region at EOC 14 is 0.094 gpm for the worst case SG. This leakage is based on the Weibull predicted number of flaws and on the TEC ARC Davis-Besse specific leak rates adjusted for a predicted radial distribution of tubes affected across the tubesheet similar to that of 13RFO. The resulting postulated MSLB leakage from the upper tube roll region is well below the DBNPS limit of 1.0 gpm.

For the more limiting degradation of axial PWSCC in the roll transition, a fully probabilistic multi-cycle OA was performed at 12RFO for this degradation and benchmarked at 13RFO. There were no indications of this degradation actually detected at 13RFO. Based on conservatively assuming that the SAI (OTSG 2-A Row 63 Tube 78 (A-63-78)) and the single volumetric indication (SVI) (B-99-26) in the roll region reported in the tables in the response to Question 1 in the DBNPS letter dated November 3, 2003 (DBNPS Serial Number 2989) are this type of degradation, even though their position in the roll suggests otherwise, a total of 5 axial indications are postulated at EOC 14 within the roll transition zone. The indications are not projected to have any effect on tube integrity or leakage contribution at EOC 14.

Postulated circumferential indications in the upper tube ends were also accounted for in the Cycle 14 OA. Leakage for this mechanism is included in the tube end cracking postulated condition at EOC 14. Based upon the size of the indications detected at 13RFO and the fact that the remaining 41% of the uninspected tubes were inspected at either 11RFO or 12RFO, the 5 indications predicted to exist at 14RFO are not significant and not expected to challenge tube integrity during axial loading conditions or leak rates during postulated large-break loss of coolant accident (LBLOCA) conditions, which is also evaluated for these indications.

Question #4:

Recently, a couple of plants have detected tube end cracking in the lower tubesheet region. Address the methodology (and technical basis) for addressing the structural and leakage integrity for degradation that could be occurring in this region of the tube given that the roll expansions and tube ends of only a limited number of tubes were inspected in the lower tubesheet with a rotating probe during the 2002 outage.

Response:

Because this degradation was not expected to be occurring in this region of the DBNPS OTSGs, no inspections of the lower tubesheet roll expansion/tube ends have been performed to date at the DBNPS. As a result of this industry occurrence, the DBNPS has revised its current Operational Assessment to address the potential for this degradation mechanism to exist in its OTSGs. The occurrence of TECs in the lower tube sheet (LTS) of the OTSGs is not considered a new degradation mechanism or an issue that would challenge the short- or long-term operation and performance of the OTSGs. Based on the eddy current signal response, the mechanism is nearly identical to the upper tube sheet (UTS) occurrences, but with a lower and slower initiation and growth rate. The primary cause is attributed to PWSCC in the mechanical roll coinciding with the heat affected zone of the tube end weld. As discussed in the response to Question #3 for the UTS, the location and geometry of the TEC damage mechanism prevent it from threatening tube structural integrity and mitigate any potential impact on leakage integrity.

Since the TEC damage mechanism is postulated to be temperature-related, the activity level in the hot leg upper tube end region is expected to lead the corresponding damage in the lower tube end for the same steam generator. A review of data from OTSGs experiencing higher levels of TECs demonstrates that this is the case. Experience of sister plants has been evaluated in determining the potential for TEC degradation in the lower tube end (LTE) region of the DBNPS OTSGs. Two factors to consider are the EFPY and the presence of TECs in the upper tube ends. Evaluating the cumulative number of affected upper tube ends versus EFPY is a more conservative approach for determining when a lower tubesheet inspection should be conducted at a plant. From analysis of the available data, a Weibull slope of 1.5 is observed for both upper and lower TEC initiation rate. Based on the temperature differences between the upper and lower tubesheets and the Weibull slope, the number of cumulative lower TECs can be approximated at 1/15th of the cumulative number of upper TECs. These conclusions are based on actual data from the results of a 100% inspection of both upper and lower tube end regions at another OTSG and represent what is defined as a mature population of tubes and indications.

The DBNPS current OA has been revised to reflect the increased potential for tube end cracking in the OTSG lower tubesheet. The number of postulated TECs is 4 in the LTE region based on the 15:1 ratio described above. These indications are postulated to be distributed similar to that occurring in the UTE region, which is preferentially occurring in the periphery. Therefore the limiting projected full cycle MSLB leak rate should be increased by 7% to account for potentially undiscovered lower tube end indications in the OTSGs. This leads to a revised value of 0.12 gpm for all postulated leakage (i.e., plugs, sleeves, TECs, rerolls, etc.) during the MSLB event for the limiting OTSG. Table 1 provides the exact breakdown of leakage for the limiting OTSG for Cycle 14. The amount of remaining margin to the 1.0 gpm limit allows for an additional 160 undetected flaws in the LTE area, assuming that they are distributed similarly to those detected (preference towards the periphery) in the UTE at the DBNPS at 13RFO.

For temperature-sensitive degradation mechanisms (for example, PWSCC, intergranular stress corrosion cracking (IGSCC)), examination may be limited to hot leg locations (expansion transitions, dings, dents, sleeves, plugs), until a C-3 result (more than 10% of the total tubes inspected are degraded tubes or more than 1% of the inspected tubes are defective as defined by EPRI Steam Generator Examination Guidelines and the DBNPS Technical Specifications) is encountered. The determination of the need to examine the cold leg for temperature-sensitive degradation mechanisms shall be based on the results of the degradation assessment and Operational Assessment. As a minimum after identifying a C-3 condition, a cold leg examination shall be performed at the next outage.

Since the UTE degradation activity level at 13RFO was below 1% of the inspected tubes, rotating coil examination of the LTE region, specifically for TEC degradation is not required based on the EPRI Steam Generator Examination Guidelines. However, since other OTSGs have identified TECs in the lower tubesheet an action requiring the degradation assessment to be revised to define a sample inspection and expansion criteria for the lower rolls/tube end region during the next scheduled OTSG inspection, has been entered into the DBNPS Corrective Action Program.

Table 1
Cycle 14 OA Leak Rate Estimate for Limiting OTSG at 14RFO

Degradation Mechanism	Leak Rate(gpm)
Freespan Axial ODSCC	0
Roll Transition PWSCC	0
Upper Tube End PWSCC	0.094
Postulated Lower Tube End PWSCC	0.00658
Upper Bundle Volumetric IGA	0
Wear	0
Circumferential Cracking at Upper Bundle Dents	0
Sleeves	0.003
Rolled Plugs	0.015
Tube End Rerolls	0.0004
Total	**0.11898**

Question #5:

A volumetric indication was located in the crevice between the tube and the upper tubesheet just below the roll transition.

Clarify the nature of this indication (e.g., initiated from the inside diameter of the tube). Provide an assessment of whether similar indications could be located in other tubes given that this indication appears to have been detected only with a rotating probe and 100 percent of the tubes were not examined. If similar indications can not be ruled out, provide the methodology (and technical basis) for addressing the structural and leakage integrity for degradation that could be occurring in this region of the tube.

Response:

The indication in question (B-99-26) initiated from the outside diameter of the tube. Based on the phase angle response and the characteristics of the signal, the indication was classified as outside diameter (OD) volumetric inter-granular attack (IGA), a degradation mechanism common to the OTSG. A review of the bobbin coil data was performed in the same region as the +Point signal and it was determined that the indication is detectable with bobbin, but not likely reportable. The IGA indication is close enough to the roll transition that the bobbin response is distorted because both are in the same bobbin coil field of view. The IGA indication can only be distinguished from the roll transition in hindsight with knowledge of the +Point result.

OD patch IGA does not have a significant impact on tube structural and leakage integrity. The pulled tube burst test results from the DBNPS indications demonstrate this, especially for low voltage indications like in the subject tube (0.12 volts and 57%TW Max Depth). Depth measurements for this type of degradation are not reliable for tube integrity assessments and voltage is a more reliable means of assessment. The bobbin coil POD for small OD volumetric indications similarly located in the uninspected tube population may not be as high as the +Point, however, detection of indications on the order of this magnitude is not required to maintain tube integrity. The more limiting freespan volumetric ODIGA was shown to meet OA acceptance criteria for Cycle 14, therefore this type of degradation in the uninspected 40% of the upper roll region is not a concern. Growth rates for this degradation mechanism are not significant per the current CMOA (~8.4% through-wall (TW) per EFPY at 95% upper bound in Average Depth); therefore undetected degradation in the uninspected population would not be expected to challenge leakage integrity at EOC 14. Additionally, the uninspected upper rolls (approximately 41%) were inspected with +Point during the 11RFO and 12RFO inspections with no detection of similar indications adjacent to the roll region. Historically at the DBNPS, volumetric OD indications have been reliably detected by the bobbin coil and confirmed by +Point in the unexpanded area of tubes in or below the UTS region of the OTSGs and have had no impact on structural or leakage integrity.

Question #7:

One tube (A-105-1) with a dent indication below the dent reporting threshold of 2.5 volts had a non-quantifiable indication (NQI). This NQI was detected with a bobbin probe and was located at or above the 14^{th} tube support. Further examination of this indication with a +Point™ probe revealed that the indication was a circumferential primary water stress corrosion cracking indication. If the indication was truly *circumferential, it is not clear why the bobbin probe detected the indication.*

Clarify whether the NQI was a result of the circumferential indication or some other anomaly (e.g., did the circumferential indication have some axial extent)? In addition, since it is very difficult to detect circumferential indications using a bobbin probe, discuss whether similar circumferential indications (which may or may not have been detected with a bobbin probe) could exist at dents that were not examined with a rotating probe.

Response:

This indication is OD, circumferentially oriented, and located within a dent measuring 1.97 Volts peak-peak (Vpp) with bobbin. The bobbin coil dent signal displays 2 excursions (complex), is rotated up slightly from horizontal and shows some change in signal phase over time. The dent signal amplitude has not grown or changed over time, but the presence of a flaw signal in the dented area began to rotate the dent signal into the flaw plane in 12RFO, when it was first reported as NQI. The area was examined with +Point in both 12RFO and 13RFO and the flaw signal exhibits little change. The +Point indication is also complex and shows both a geometry response and a flaw response. Both linear and volumetric characteristics are present in the flaw component when reviewing the +Point and 3-coil (pancake, axial, circ) probe data. The flaw component persists across the length of the dent giving it a measurable axial extent, but has sufficient circumferential response such that it was conservatively reported as a circumferential indication. As such, it is not unexpected that the bobbin coil could detect an indication of this nature. As previously indicated, this tube is directly in front of an alignment pin of the auxiliary feedwater header and the dent elevation coincides exactly with the pin location.

For dents at or above the 14th tube support plate (TSP), a 100% inspection was performed at 13RFO. To date, reported indications of cracking in dents at the DBNPS have been limited to dents in this region. Four locations (3 SAI and 1 SCI) were confirmed with +Point as containing indications of SCC. All four of these signals were located above the 15th TSP and were detected with bobbin and reported as NQI. The three axial indications detected were also in dents that were less than the 2.5 volt bobbin reporting threshold. The dents reported in the response to Question 1 in the DBNPS letter dated November 3, 2003 (DBNPS Serial Number 2989) for these indications are actually from the 0.115" Pancake coil probe. The fact that these flaws are detected and reported as potentially flaw-like by the bobbin coil probe indicates a relatively good bobbin POD for flaws in dents at the DBNPS (See Response to Question #10 below for Analysis Guidelines Instructions). For dents below the 14th TSP, the DBNPS conducted a 20% sample during both 11RFO and 12RFO, with a 60% inspection during 13RFO, completing a 100% sample in three cycles, with no indications of degradation present.

During the 13RFO inspection, no indications of structural or leakage significance were detected in either sample inspection above or below the 14th TSP. Based on these inspection results and the current Cycle 14 OA, the integrity of uninspected dents in the lower elevations is not expected to be challenged during the upcoming cycle.

Question #10:

For the dents not examined during the 2002 outage, please describe the methodology used to assess the integrity of these tubes for the period of time between inspections. Include in this response, the size distribution of the dents not inspected and an assessment of whether the bobbin would have detected axial and circumferential cracks at these locations (given the size of the dent).

Response:

As previously stated, 100% of the dents located at or above the 14th TSP were inspected during 13RFO, and for dents below the 14th TSP, the DBNPS completed a 100% sample in three cycles with no indications of degradation present in any of the inspections. As requested, the figures provided below indicate the inspected versus uninspected population of dents in the region below the 14th TSP (not including dents at or in the LTS region) during the 13RFO inspection. Note that the 30 volt dent in A-61-109 was inspected in 12RFO with a +Point probe and no degradation was detected (dent present in history). Sampling in both OTSGs at the LTS sludge and dented region is accomplished under a separate inspection program.

As indicated in the Question #7 response above, no indications of cracking have been detected in dents below the 15th TSP at the DBNPS. Additionally, it is important to note the following observations regarding flaws in dents in OTSGs: 1.) In general, indications detected in dented regions of OTSG tubes have been first detected and reported by bobbin coil (NQI); 2.) Indications have been OD in nature, and 3.) Specifically at the DBNPS, the indications that have been detected in dents have also been detected and reported via bobbin coil inspection of the area. These facts indicate that the crack morphology that occurs at dented tube areas in OTSGs and specifically at the DBNPS has enough axial and/or volumetric response to be detected by bobbin coil inspections.

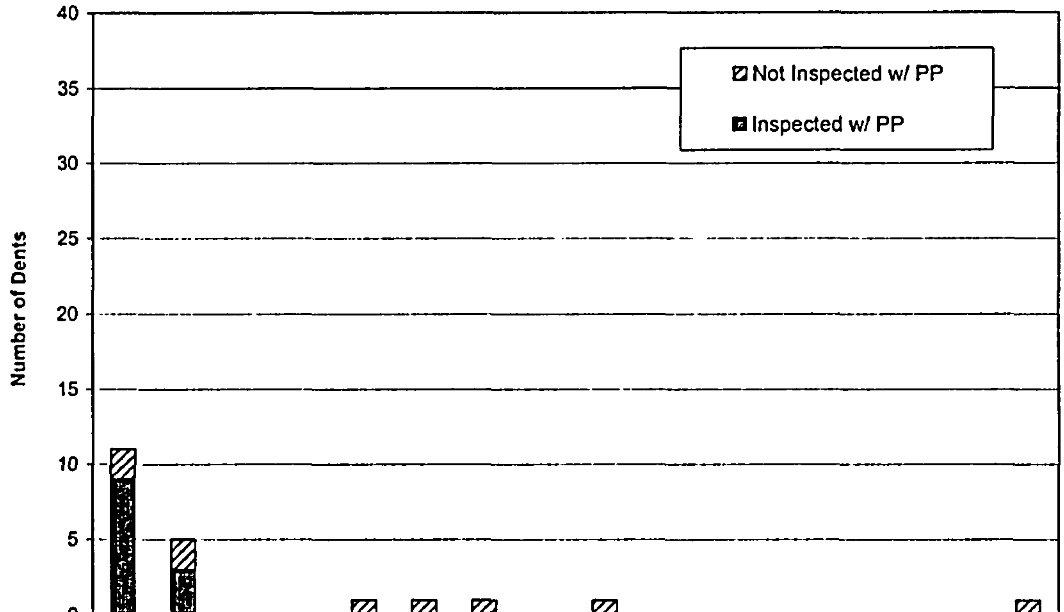
The data analyst site specific qualification training and testing for the DBNPS 13RFO inspection included dents with indications of degradation. The analysis guidelines included guidance in the bobbin eddy current technique specification sheet (ETSS) instructing the analysts to review dent indications for possible degradation as follows: *"Dents are prone to cracking and should be reviewed for possible indications of degradation. Examples of this include dent signals which have rotated up (not horizontal) and distorted signals typically with a vector or signal component in the ID or OD phase plane. If in doubt, report as NQI."*

Dents that have been found to have degradation in the industry typically display some unusual characteristic that can be attributed to the degradation, whether it is a distortion of the dent signal by some specific vector within the dent signal or simply a rotation of the entire dent signal towards the flaw plane. The training and analysis guidance provided to the analysts for the 13RFO inspection, provides reasonable assurance that dent signals were thoroughly and properly reviewed for indications of degradation thereby optimizing the bobbin POD for this type of degradation. Recent events at another OTSG indicated an issue with what appeared to be a Manufacturers Burnish Mark (MBM) coincident with a dent that eventually became degraded with SCC to the point of not meeting structural integrity performance criteria. As a result of this occurrence, an action had been entered into the DBNPS Corrective Action program that required an evaluation of this condition in its OTSGs. The results indicated that the DBNPS OTSGs have no dents identified with the presence of another signal such as a MBM or other characteristic that are not required to be repaired. When multiple signals are present in a dented area, difficulty in monitoring the dent for developing degradation can result and the tube would be repaired at the DBNPS.

Since SCC at dents (below the 14th TSP) is not considered active and all of the dents have been inspected over a rolling 60 EFPM timeframe, no expansion of the dent inspection scope was performed at 13RFO and the tube integrity analyses did not include any adjustments for the uninspected dent population. As demonstrated by the Figures, the inspected population provided a sufficient interrogation of dents such that if degradation existed in this region, the sample would have been sufficient to provide a high probability of detecting active degradation in the sample. At the next scheduled inspection of the OTSGs, the DBNPS is planning on inspecting 100% of all dents in all areas of the OTSGs, as well as preventive plugging of significant dents in the region at or above the 14^{th} TSP in the periphery (damaged from auxiliary feedwater (AFW) header issues), where existing conditions (temperature, flow, loads) could accelerate tube degradation at the dented area.

Docket Number 50-346
License Number NPF-3
Serial Number 3013
Attachment 1
Page 14 of 16

Voltage Distribution for Dents Between LTS and 14S
DBNPS SG 2-A 02/02 13RFO



	<=3	4	5	6	7	8	9	10	12	14	16	18	20	25	30	>30
Not Inspected w/ PP	2	2	0	0	1	1	1	0	1	0	0	0	0	0	0	1
Inspected w/ PP	9	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Bobbin Volts

Voltage Distribution for Dents Between LTS and 14S
DBNPS SG 1-B 02/02 13RFO

	<=3	4	5	6	7	8	9	10	12	14	16	18	20	25	30	>30
Not Inspected w/ PP	7	8	11	5	2	1	2	1	5	2	0	0	0	0	0	0
Inspected w/ PP	16	24	8	6	2	0	3	1	1	2	1	0	0	1	0	0

Bobbin Volts

Question #14:

During a phone call with NRC on December 11, 2003, it was requested that the licensee provide discussion of any shutdown and layup chemistry excursions that may impact the SG tube integrity assessments presented above or in the DBNPS Operational Assessment.

Response:

As part of evaluating a one-time extension of the Technical Specification surveillance requirement for inspecting the steam generators, which would require a March 2004 inspection, a review of the OTSG chemistry conditions for the period February 16, 2002 to December 1, 2003 was performed by Framatome ANP. This review is documented in Attachment 4 of the DBNPS license amendment application dated December 16, 2003 (DBNPS Serial Number 3000). The review evaluated the layup and storage conditions in the OTSGs during the current plant shutdown, which also included a Normal Operating Pressure Test (NOPT) period. The objectives of the evaluation were to ensure that appropriate controls were in place during the extended outage to preclude any adverse effects on the OTSGs and to provide a technical basis to support a license amendment request to add an exception to permit OTSG operation beyond the 24 month inspection interval for the first inspection following 13 RFO.

No conditions were identified that would have an adverse effect on, or cause any type of known corrosion damage to, the steam generators during the layup period, including the NOPT conducted September 13, 2003 to October 4, 2003. Furthermore, no conditions were identified that would require an assessment of active degradation mechanisms, crack growth rate progressions, or internal steam generator components.

Based on the review of chemistry control during steam generator layup and the NOPT, it is concluded that no conditions existed nor excursions occurred that would require an assessment of their effect on OTSG degradation mechanisms, crack growth rate progressions, or internal steam generator components. No conditions or excursions were identified that would have an adverse effect on, or cause any type of known corrosion damage to the steam generators during the layup and NOPT periods.

Assuming that the current satisfactory storage and layup conditions are maintained until plant startup, there are no steam generator chemistry issues that adversely affect the conclusions of the current OTSG Operational Assessment for Cycle 14.

COMMITMENT LIST

The following list identifies those actions committed to by the Davis-Besse Nuclear Power Station (DBNPS) in this document. Any other actions discussed in the submittal represent intended or planned actions by the DBNPS. They are described only for information and are not regulatory commitments. Please notify the Manager – Regulatory Affairs (419-321-8450) at the DBNPS of any questions regarding this document or any associated regulatory commitments.

COMMITMENT	DUE DATE
None	N/A